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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/590,197	11/27/2007	Arnaud Huignard	294729US0PCT	5542

22850 7590 10/01/2010

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EXAMINER	
WIECZOREK, MICHAEL P	
ART UNIT	**PAPER NUMBER**
1712	

NOTIFICATION DATE	DELIVERY MODE
10/01/2010	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/590,197	HUIGNARD ET AL.	
	Examiner	Art Unit	
	Michael Wieczorek	1712	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 August 2010*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-29* is/are pending in the application.

4a) Of the above claim(s) *1-14,28 and 29* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *15-27* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *12/22/2006, 4/11/2008*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election with traverse of Group II, claims 15-27, in the reply filed on August 23, 2020 is acknowledged. The traversal is on the ground(s) that the conclusion of lack of unity has not been met. This is not found persuasive.

2. Applicant's arguments toward the citation of MPEP section 803 in regards to when a restriction is proper is not persuasive because since this is a national stage application it is not required to show that the groups of inventions are independent or patentably distinct from each other and that there would be a serious burden if the restriction was not required. For national stage application it is only required to show that there is a lack of unity between the groups of inventions in order to require a restriction.

3. As for applicant's arguments concerning lack of unit, lack of unity of invention may be may only become apparent "a posteriori," that is, after taking the prior art into consideration, in the case of independent claims to A + X and A + Y, unity of invention (i.e. species) is present a posteriori as A is common to both claims. The inventions listed as Groups I and II do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: the special technical feature which is referred to Annex B of Appendix A1 of the MPEP (Administrative Instructions under the PCT, "Unity of Invention"). The express "special technical features" is defined as meaning those technical features that define a contribution which each of the inventions, considered as a whole, makes over the prior art." (Rule 13.2). Unity exists only when there is a technical relationship among the claimed inventions involving one or more of the

same or corresponding claimed special technical features. In this case, the technical feature shared by each invention is a product comprising a substrate with a mineral silicon containing sublayer and an outer layer of a hydrophobic agent grafted onto the sublayer. As was discussed in the previous Requirement for Restriction, dated July 23, 2010, Yamamoto et al (U.S. Patent # 6,482,524) teaches a product comprising a substrate on which is an essentially mineral silicon containing sublayer/undercoating on which is a water repellent layer grafted onto the sublayer (Column 9 Line 30 through Column 10 Line 18). Thus there is no "special technical feature" linking groups I and II since Yamamoto teaches the claimed product linking the two groups together.

The requirement is still deemed proper and is therefore made FINAL.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claim 24 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

6. Claim 24 recites the limitation "the fluorosilane layer". There is insufficient antecedent basis for this limitation in the claim or in parent claim 15. For the purposes of this examination the fluorosilane layer will be taken to be the layer formed from the hydrophobic agent since the specification discloses that the hydrophobic agents used comprises fluorosilane. Clarification on this issue is requested.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 15-17 and 24 are rejected under 35 U.S.C. 102(b) as being taught by Uemura et al (European Patent Publication No. 0476510A1).

Uemura teaches a process for providing water repellency to a glass plate comprising a transparent metal oxide film layer formed on the surface of the rendering the film layer into fine unevenness prior to coating with a water repellent (Abstract and Page 2 Lines 20-23). The metal oxide film layer/sublayer formed is comprised of Silicon oxide (Page 2 Lines 45-49) and thus can be considered an essentially mineral silicon-containing sublayer.

The specification of the present application discloses that the term "activated" means that a surface has undergone a treatment which has modified its electrostatic state and/or its chemical state (creation or destruction of chemical functional groups), in order to increase the reactivity of said surface, which treatment may go as far as tearing the material of the surface, thus creating irregularities (Page 3 Lines 17-24 of the specification of the present application).

As was discussed above, Uemura has the sublayer surface roughened prior to application of the water repellent material and further teaches that this is accomplished by plasma etching (Page 3 Lines 48-54). Thus Uemura teaches activating the sublayer surface by plasma etching followed by applying the hydrophobic agent while the surface is in an activated/roughened state.

As for claim 16, the specification of the present application states an activated surface of the silicon-containing mineral layer may be obtained by depositing it under conditions in which its surface is obtained directly in the activated state by depositing the layer by plasma enhanced chemical vapor deposition (PECVD) or by magnetron and/or ion-beam sputtering (Page 6 Line 33 through Page 7 Line 1). Uemura teaches forming the metal oxide layer by plasma CVD or sputtering (Page 2 Lines 53-55), thus Uemura teaches directly forming the sublayer in an activated state.

As for claims 17, as was discussed above, Uemura teaches performing an activation treatment of plasma etching to activate the surface of the sublayer, which would inherently, comprises at least one pass or application of plasma etching gas.

As for claim 24, Uemura teaches that the water repellent layer is deposited onto the activated surface by flow-coating (Page 3 Lines 32-36) and that typical agents used are fluorosilanes (Page 2 Lines 7-10).

9. Claims 15-17 and 22 are rejected under 35 U.S.C. 102(b) as being taught by Chartier et al (U.S. Patent # 5,800,918).

Chartier teaches a glass substrate comprising an essentially mineral sublayer on which is a hydrophobic layer (Abstract). The sublayer of Chartier comprises silicon dioxide (Column 2 Liens 9-16) and thus can be considered an essentially mineral silicon-containing sublayer.

Chartier teaches that the glass product is formed by depositing a hydrophobic agent in the form of a solution containing fluorosilane onto the sublayer wherein the sublayer has been cleaned prior to application of the hydrophobic agent (Column 3 Lines 56-67).

Chartier teaches that cleaning of the sublayer increases the reactivity between the sublayer and the deposited layer by removing absorbed contamination from the surface (Column 4 Lines 1-12). Thus the cleaning step of Chartier can be considered an activating step and since the sublayer is cleaned when the hydrophobic agent is applied the sublayer is in a state of activation when the hydrophobic agent is applied.

As for claim 16, Chartier teaches depositing the sublayer directly in a state of activation (Column 4 Lines 1-12). Furthermore, Chartier teaches forming the sublayer by plasma CVD (Column 2 Lines 50-58), which as was discussed above, also deposits the sublayer in a state of activation.

As for claim 17, as was discussed above, teaches cleaning the sublayer thus activating the sublayer by carrying out an activation treatment.

As for claim 22, Chartier teaches that the silicon containing sublayer is formed by pyrolysis (Column 4 Lines 23-24).

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

11. The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

12. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Uemura et al.

The teachings of Uemura as it applies to claim 15 have been discussed previously. Though Uemura teaches applying a hydrophobic agent to an activated sublayer surface it does not specifically teach that the hydrophobic agent is deposited within the shortest possible time after the surface has been activated.

However, it would have been obvious to one having ordinary skill in the art to have determined the optimum values of the relevant process parameters through routine experimentation in the absence of a showing of criticality. *In re Aller*, USPQ 233 (CCPA 1955)

The time lapse between surface activation and hydrophobic agent deposition is a relevant process parameter because it affects the entire time to complete the hydrophobic layer formation process. By shortening the time between each processing step and thereby shortening the entire production time overall production is thus increased. Thus it would have been obvious to one of ordinary skill in the art to determine optimal time to wait before applying the hydrophobic agent after activation of the sublayer surface (either by etching or cleaning) through routine experimentation in the absence of a showing of criticality.

13. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chartier et al.

The teachings of Chartier as it applies to claim 15 have been discussed previously. Though Chartier teaches applying a hydrophobic agent to an activated sublayer surface it does

not specifically teach that the hydrophobic agent is deposited within the shortest possible time after the surface has been activated.

However, as was discussed above in the rejection of claim 18 by Uemura, the time between each processing step is a relevant process parameter and thus it would have been obvious to one having ordinary skill in the art to determine optimal time between each processing step for the process of Chartier through routine experimentation in the absence of a showing of criticality.

14. Claims 20 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Uemura et al as applied to claim 17 above, and further in view of Okudaira et al (U.S. Patent # 4,330,384).

The teachings of Uemura as it applies to claim 17 have been discussed previously. Though Uemura teaches that the silicon-containing layer is etched to activate the sublayer it does not teach that the gas used to form the plasma is fluorine-containing.

Okudaira teaches a method of plasma etching of silicon and silicon containing layers (Abstract and Column 1 Lines 6-9) wherein the taught etchant gases used to etch silicon dioxide layers include fluorine containing gases such as SF6 and CF4 (Column 2 Lines 53-59 and Column 3 Lines 7-19).

At the time the present invention was made it would have been obvious to one having ordinary skill in the art to use a fluorine containing gas as the plasma etchant gas. Based on the teachings of Okudaira, it would have been obvious to use a fluorine containing gas such as SF6

or CF4 in the plasma etching step of Uemura since these are conventionally used gases for plasma etching and they are known in the art for being able to etch silicon dioxide films.

As for the limitation of oxygen gas, since the claim discloses that oxygen is used "where appropriate", the use of oxygen is taken to be optional. Furthermore, Okudaira teachings including oxygen into the fluorine etchant gas in the volumetric range of 3 to 20% in order to prevent undercutting during etching (Column 5 Lines 44-54).

As for claim 21, Uemura teaches that unevenness/activation is only formed on the metal oxide film layer (Page 2 Line 54 through Page 3 Line 2), thus the etching/activation treatment is carried for the sublayer without any additional etching of the glass substrate. However, Uemura does not teach monitoring during the etching/activation process.

Okudaira teaches that by monitoring the etching process over etching can be eliminated. Thus based on the teachings of Okudaira it would have been obvious to one of ordinary skill to monitor the etching process of Uemura so that only the oxide sublayer is etched in order to prevent over etching.

15. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chartier et al as applied to claim 17 above, and further in view of Suzuki (U.S. Patent Publication No. 2001/0048981).

The teachings of Chartier as it applies to claim 17 have been discussed previously. Though Chartier teaches an activation treatment in the form of cleaning which activates the surface by removing contaminants but does not go as far as etching (Column 4 Lines 1-12), it does not teach that the cleaning/activation is conducting using a plasma or by an ion beam.

Suzuki teaches a method of plasma processing substrate (Abstract) wherein the plasma processing uses gases of oxygen, nitrogen, hydrogen and mixture thereof to clean substrate surfaces (Paragraph 0047-0048). The plasma processing method of Suzuki is conducted at low pressure (Page 5 Paragraph 0055) and is applicable to processing silicon dioxide film surfaces (Page 5 Paragraph 0058).

At the time the present invention was made it would have been obvious to activate the surface of the sublayer using a plasma which does not go as far as etching. Based on the teachings of Suzuki one of ordinary skill in the art would have a reasonable expectation of success in using the plasma cleaning process of Suzuki during the cleaning step of Chartier since the method of Suzuki is a known and effective cleaning process for removing surface contaminants from the surfaces of silicon dioxide films.

16. Claims 22 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Uemura et al as applied to claim 15 above, and further in view of Lopata et al (U.S. Patent # 5,487,920).

The teachings of Uemura as it applies to claim 15 have been discussed previously. As for claims 22 and 23, Uemura teaches an example where the metal oxide layer is deposited under vacuum by PECVD (thus low-pressure PECVD) using a SiH4 precursor and an oxidizer in the form of N2O followed by plasma etching/activation within the same apparatus (thus in the same chamber or in a separate chamber) (Example 3 Pages 3 and 4) but it does not teach that the metal oxide layer is deposited cold by the PECVD process.

Lopata teaches a PECVD process for depositing a silicon containing compound onto a glass surface to form an optically clear anti-fog and anti-scratch film (Abstract and Column 1

Lines 6-14) which are known in the art to be comprised of silicon dioxide (Column 1 Lines 32-56).

The method of Lopata comprises plasma CVD using a mixture of an silicon-containing compounds and oxidizers in the form of N2O and CO2 (Column 1 Line 60 through Column 2 Line 5) wherein the deposition process is conducted around ambient temperatures at reduced pressures (Column 2 Lines 15-21 and 59-63 and Column 5 Lines 21-24), thus the material is deposited cold onto the substrate. Furthermore, Lopata teaches that suitable silicon containing gases for use in the taught method include silane and silane containing compounds (Column 3 Lines 22-51).

At the time the present invention was made it would have been obvious to deposit the silicon-containing layer cold onto the substrate by low pressure PECVD. Based on the teachings of Lopata, one of ordinary skill in the art would have a reasonable expectation of success in using the low pressure and low temperature PECVD process of Lopata to deposit the silicon dioxide layer in the method of Uemura. Furthermore, as suggested by Lopata, by using a low/cold temperature deposition process the substrate is prevented from thermal degradation or distortion (Column 2 Lines 15-21).

17. Claims 25-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Uemura et al as applied to claim 15 above, and further in view of Combes et al (U.S. Patent # 5,656,559).

The teachings of Uemura et al as they apply to claim 15 have been discussed previously. In the cases of claims 25 through 27 though Uemura teaches forming a sublayer on a glass surface followed by activation through etching of the sublayer which then has deposited onto the

activated sublayer a hydrophobic agent to form a glazing having a hydrophobic coating, it does not teach that the glass is manufactured from a float process wherein the formed glass sheets are converted by the operations such as bending, toughening, and/or assembling.

Uemura does teach that the glass substrates used are intended to be used as window glass for automobile with a water repellent surface (Page 2 Lines 1-2).

Combes teaches a glass composition wherein panes formed from the glass are used in the automobile industry and can be produced by the float glass technique (Abstract and Column 1 Lines 8-13). Combes further teaches that the float glass formation process comprises forming the glass in a bath of molten tin which upon leaving the molten tin is subjected to a bending operation, especially when the glass it to be mounted on an automobile vehicle (Column 5 Lines 30-43). Thus Combes teaches that the float glass formation process as disclosed within the claims is a known glass formation process including when used to form panes of glass used in the automobile industry.

At the time the present invention was made it would have been obvious to one having ordinary skill in the art to have formed the glass substrate using a floated process followed by a conversion process of the formed glass substrate. Based on the teachings of Combes, one of ordinary skill in the art would have a reasonable expectation of success in performing the hydrophobic coating formation process of Uemura on a glass substrate formed from the float process since it is known in the art to form glass panes used in automobiles by the float process and Uemura is directed to forming water repellent coating on glass substrates used as windows in automobiles.

As for the limitation of when the sublayer is formed on the glass substrate, in general, the transposition of process steps of the splitting of one step in to two, where the processes are substantially identical or equivalent in terms of function, manner and result, was held to not patentably distinguish the processes. *Ex parte Rubin*, 128 USPQ 440 (Bd. Pat. App. 1959)

Thus since the method of Uemura in view of Combes teaches a processes which is substantially equivalent in terms of function, manner and result as the one claimed in claims 25 through 27, claims 25 through 27 are not patentably distinguishable from the teachings of Uemura in view of Combes.

18. Claims 25-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chartier et al as applied to claim 15 above, and further in view of Combes et al.

The teachings of Chartier as it applies to claim 15 have been discussed previously. Though Chartier teaches the sublayer and hydrophobic layer formation steps as claimed in claims 25 through 27 it does not teach that the glass substrate is formed from the float process.

Chartier does teach that the glasses formed in the taught method are intended to be window glasses for automobiles (Column 1 Lines 6-14) and thus claims 25 through 27 are rejected for the same reasons as were discussed above in the rejection of claims 25 through 27 by Uemura in view of Combes since, like Uemura, the hydrophobic glass of Cherties is intended to be used as a window in automobiles.

Conclusion

Claims 15 through 27 have been rejected. Claims 1 through 14, 28 and 29 have been withdrawn as being directed toward non-elected inventions. No claims have been allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Wieczorek whose telephone number is (571)270-5341. The examiner can normally be reached on Monday through Friday; 6:00 AM to 3:30 PM (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Cleveland can be reached on (571)272-1418. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Michael Wieczorek/
Examiner, Art Unit 1712

/Michael Cleveland/

Supervisory Patent Examiner, Art Unit 1712